UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,871	10/06/2000	Todd Alan Balisky	MPH-106107-0	5854

7590 07/16/2003

Patent Counsel
Applied Materials Inc
P O Box 450 A
Santa Clara, CA 95052

8

EXAMINER
SINES, BRIAN J

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/647,871	Applicant(s) BALISKY, TODD ALAN
	Examiner Brian J. Sines	Art Unit 1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-22 and 24-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-22 and 24-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 6, 10 – 18, 22, 24 – 52, 55 – 59, 62 and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakisako et al. (U.S. Pat. No. 4,749,552). Regarding claims 1 and 27, Sakisako et al. teach an automatic titration apparatus comprising: an analyzer (S & A); a precision analyzer sample delivery arrangement (e.g., circulating pump 1, SV4, SV5, 3, 9) (see col. 3, lines 4 – 18); a controller (C); and a replenisher (e.g., circulating pump 1) (see col. 3, lines 4 – 45; figure 1). Sakisako et al. teach a purge system for cleaning the analyzer and delivery arrangement (see col. 3, lines 25 – 41). Regarding claim 2, Sakisako et al. teach that the analyzer comprises a titrator system (T) (see col. 3, lines 19 – 24). Regarding claims 3 and 27, the system comprises a reaction cell (2 & 9). Regarding claim 4, Sakisako et al. anticipate that the vessel or reaction cell (9) may comprise a beaker (see col. 3, lines 25 – 32). Regarding claims 5 and 28, Sakisako et al. teach the use of a pH electrode (11) (see col. 3, lines 25 – 41). Regarding claims 6 and 28, Sakisako et al. teach the use of an oxidation-reduction potential measuring electrode (12) (col. 3, lines 25 – 41). Regarding claim 10, Sakisako et al. teach a global loop for distributing a chemical solution (see section S of figure 1). Regarding claims 11 – 17, Sakisako et al. teach all of the structural limitations as recited by these instant claims. Sakisako et al. teach that the controller (15) of the control mechanism (C) comprises a display

(see col. 3, lines 42 – 45). Regarding claim 16, Sakisako et al. teach a chemical sensor (11 & 12) (see col. 3, lines 25 – 45). Regarding claim 17, Sakisako et al. teach that the system comprises a chemical tank (9) (see col. 3, lines 4 – 18). Regarding claims 18 and 29, Sakisako et al. teach that the system comprises a liquid level monitoring or proximity arrangement (10) (see col. 3, lines 46 – 51). Regarding claim 22, the sample delivery arrangement comprises an eductor (1 & 3) for drawing a sample to the analyzer. Regarding claim 24, Sakisako et al. teach a purge system comprising air pump (13) and solenoid valve (SV3) (see col. 3, lines 36 – 41). Regarding claims 25 and 26, Sakisako et al. teach that the purge system additionally comprises a rinse solvent purge valve controlling a rinse solvent, such as tap water, for clearing the analysis system (see col. 5, lines 5 – 34). Regarding claim 30, Sakisako et al. teach that the sample delivery arrangement comprises a burette or syringe (see col. 3, lines 4 – 24). Regarding claim 31, Sakisako et al. teach the use of a controllable drive (22 & 23) for driving the burette or syringe (see col. 3, lines 52 – 67). Regarding claim 32, Sakisako et al. teach the use of a stepper motor drive (35) (see col. 4, lines 1 – 24). Regarding claim 33, as shown in figure 1, Sakisako et al. teach that the replenisher (1) is arranged to deliver a controlled quantity of the predetermined chemical constituent to a storage tank (4) containing the chemical solution. Regarding claims 34 and 35, Sakisako et al. teach that the system comprises a cleanup arrangement or purge system comprising air pump (13) and solenoid valve (SV3) (see col. 3, lines 36 – 41; col. 5, lines 5 – 34). Regarding claim 36, Sakisako et al. teach that the cleanup arrangement or purge system additionally comprises a rinse solvent purge valve controlling a rinse solvent, such as tap water, for clearing the analysis system (see col. 5, lines 5 – 34). Regarding claim 37, Sakisako et al. teach that the cleanup arrangement comprises a syringe cycling arrangement for cycling for

cycling a sample syringe or burette until the burette is cleared of a prior sample (see col. 5, lines 5 – 35). Regarding claim 38, Sakisako et al. teach a method of analysis comprising the steps of: delivering a sample to an analysis cell; performing a titration analysis, wherein the titration analysis comprises the steps of: controlling a piston pump, which is a syringe equivalent apparatus, or burette to deliver a titrant to a chemical solution; monitoring a predetermined chemical characteristic of the chemical solution during the performance of the titration analysis; determining an endpoint of the titration analysis; and finally conducting a cleanup procedure of the titration analysis system (see col. 2, line 40 – col. 5, line 57). Regarding claim 39, Sakisako et al. teach a method step of delivering a predetermined sample quantity of a chemical solution to the sample cell (see col. 3, lines 4 – 18). Regarding claim 40, Sakisako et al. teach a method step of cycling a sample syringe or burette (see col. 3, lines 4 – 18; col. 5, lines 5 – 34). Regarding claims 41 and 42, Sakisako et al. teach a method step of adjusting the rate at which the titration analysis is performed (see col. 6, lines 5 – 23). Regarding claims 43, Sakisako et al. teach a methodology of purging and cleaning the analysis cell (see col. 3, lines 25 – 32; col. 5, lines 5 – 34). Regarding claim 44, Sakisako et al. teach a method step of using a level sensor for detecting and confirming the delivery of all reagents to the analysis cell (see col. 3, lines 25 – 51). Regarding claim 45, Sakisako et al. teach a methodology of delivering each chemical solution required for the titration analysis by timing the delivery of each solution (see col. 7, lines 17 – 35). Regarding claim 46, Sakisako et al. teach delivering a conditioning reagent (see col. 5, lines 35 – 47). Regarding claim 47, Sakisako et al. further teach the use of a gravity feed arrangement (16) (see col. 4, line 65 – col. 5, line 3). Regarding claims 48 and 49, Sakisako et al. teach the further steps of delivering a conditioning reagent using a pump, controlling a

syringe or burette using a stepper motor drive (see col. 3, lines 46 – 68; col. 4, lines 1 – 24; col. 6, lines 5 – 23). Regarding claims 50 – 52, Sakisako et al. teach a methodology of taking analog readings of a predetermined chemical characteristic and determining an end-point of each titration analysis (see col. 4, lines 41 – 64). Regarding claims 55 – 59, Sakisako et al. teach the use of a gas purge for sample agitation and for cycling a syringe or burette (see col. 3, lines 32 – 41; col.5, lines 5 – 34). Regarding claims 62 and 63, Sakisako et al. teach the methodology of performing a differential titration analysis using an ORP electrode (see col. 6, lines 5 – 23; col. 6, line 65 – col. 7, line 16).

Claims 1 – 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Becket (U.S. Pat. No. 5,389,546A). Regarding claim 1, Becket teaches a chemical control system comprising: an analyzer (23); a sample delivery arrangement (34) for delivering to the analyzer a sample of a chemical solution (31); a controller (23); and a replenisher (28), which is responsive to the controller (23) for dispensing a controlled quantity of a predetermined chemical constituent (titrant, 37) (see col. 10, lines 20 – 68; col. 11, lines 1 – 65; figure 1). Becket teaches a purge system for cleaning the analyzer cell portion (e.g., portions of the apparatus comprising parts 16, 17, 35 & 36) and the delivery arrangement (e.g., 15 & 41) (see col. 9, lines 54 – 66). Regarding claim 2, Becket teaches that the analyzer is a titrator system (see col. 3, lines 47 – 66). Regarding claim 3, Becket teaches that the analyzer system may further comprise a compartment or reaction cell (R) for receiving a sample of the chemical solution from the analyzer sample delivery arrangement (34); and a sensor (electrode, 17 & 22) for measuring a predetermined characteristic of the chemical solution. Regarding claim 4, Becket teaches the use of a glass beaker (see col. 4, lines 1 – 47). Regarding claim 5 and 7, Becket teaches the use of a pH

electrode and anticipate the use of an ion selective electrode and an ORP electrode (see col. 4, lines 1 – 68; col. 10, lines 20 – 40). Regarding claim 8, Becket anticipates the incorporation of a turbidity sensor (see col. 15, lines 21 – 58).

Claims 68 – 75 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoogendijk (EPO publication no. 0 517 339 A1). Hoogendijk teaches a method and apparatus of concentration determination using an ion-selective electrode. Regarding claim 68, Hoogendijk teaches a method for performing an ion selective analysis, wherein the method comprises the steps of: delivering a sample to an analysis cell; performing an ion selective analysis on the chemical solution; measuring the electrode potential value of an ion selective electrode; and determining a quantity of an analyte in the chemical solution (see pp. 1 – 5). Regarding claim 69, Hoogendijk anticipates the multi-addition of a predetermined amount of a standard solution comprising between 2 and 6 predetermined amount s of the standard solution (see p. 3). Regarding claim 70, Hoogendijk teaches the step of delivering a plurality of predetermined amounts of standard solution (see p. 3). Regarding claims 71 and 72, Hoogendijk anticipates these electrode potential differences between successive measurements (see p. 5). Regarding claim 73, Hoogendijk anticipate a step of reducing the rate at which the delivery of the predetermined amounts a standard solution is performed (see p. 9). Regarding claims 74 and 75, Hoogendijk teaches the step of extrapolating a plurality of the measured electrode potential values back to the point of zero analyte concentration (see p. 3 & figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 19 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakisako et al. as applied to claims 1 – 6, 10 – 18, 22, 24 – 52, 62 and 63 above, and further in view of Suthergreen et al. (U.S. Pat. No. 5,351,725A). Regarding claim 19, Sakisako et al. do not specifically teach the use of a liquid level monitoring arrangement, which comprises a pressure monitoring system. Sakisako et al. do teach the use of a level switch (10) connected to the central processing unit (17). The control mechanism (C) comprises a control unit (15) further comprising the central processing unit (17). The control unit (15) comprises a microcomputer, a display and a transducer (col. 3, 42 – 59). Suthergreen et al. teach a cost-effective, accurate and reliable system of measuring the quantity of liquids in storage tanks (col. 2, lines 55 – 59). Suthergreen et al. do teach the use of a pressure transducer (58) involved in the monitoring of the quantity and other characteristics of liquid in tank (48) (col. 5, lines 35 – 68; col. 6, lines 1 – 49). Suthergreen et al. teach that the airbell structure (52) involved in pressure sensing comprises a plastic tubing (col. 6, lines 3 – 59; figure 4). Therefore, it would have been obvious

to one of ordinary skill in the art to incorporate the liquid level sensing system with its associated benefits, as taught by Suthergreen et al., with the apparatus of Sakisako et al., in order to provide for a more effective liquid level monitoring arrangement. Regarding claims 20 and 21, the pressure that is delivered to the liquid level monitoring arrangement is considered a result effective variable whose determination would have been within the ambit of one of ordinary skill in the art without undue experimentation. The Courts have held that the discovery of an optimum value of a result effective variable, without producing any new or unexpected results, is within the routine skill of one of ordinary skill in the art (see *In re Boesch*, 205, USPQ 215 CCPA 1980)).

Claims 53, 54, 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakisako et al. (U.S. Pat. No. 4,749,552). Regarding claims 53 and 54 Sakisako et al. do not specifically teach that the end-point of the titration analysis is repeated between approximately 2 and 9 times. However, it is notoriously well known in the art of laboratory experimentation to perform experiments a number of times in order to verify experimental data. Regarding claims 60 and 61, Sakisako et al. do not specifically teach the steps involved in calibrating a pH electrode prior to use. However, the calibration of pH electrodes are notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to calibrate the pH electrode as taught by Sakisako et al. prior to use.

Claims 8, 64 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakisako et al. as applied to claims 1 – 6, 10 – 18, 22, 24 – 52, 62 and 63 above, and further in view of Janzen (U.S. Pat. No. 4,095,272). Sakisako et al. do not specifically teach the use of a turbidity sensor in determining the end-point of a titration analysis. Sakisako et al. do teach that

the disclosed system and method may be used to perform a titration analsysis where the optical properties of the sample are changed by the titration of a reagent (see col. 1, lines 30 – 43). Janzen teaches an automatic turbidometric titration system and method. Janzen recognizes that the accuracy of a titration analysis can be enhanced through the use of turbidity detection when the equivalence point for a chemical system under titration analysis experiences a turbidity maximum (see col. 1, lines 1 – 44). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the apparatus and methodology of automatic turbidometric titration analysis, as taught by Janzen, with the automatic titration system and method, as taught by Sakisako et al., in order to provide for an effective system and method of titrating chemical systems susceptible to turbid conditions.

Claims 65 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakisako et al. and Janzen as applied to claims 8, 64 and 67 above, and further in view of Nagy et al. (U.S. Pat. No. 4,120,657). Sakisako et al. and Janzen are silent to the teaching of titrating a solution of unkown cyanide concentration. Sakisako et al. do teach that the automatic titration apparatus may be utilized in the titration analysis of industrial waste water (see col. 1, lines 30 – 43). Nagy et al. do teach the analysis of the cyanide concentration using silver ion in an industrial sewage (see col. 7, lines 26 – 60). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Sakisako et al. and Janzen with the titration analysis methodology of Nagy et al. in order to effectively determine the concentration of cyanide in the waste water.

Response to Arguments

Regarding the rejections of the claims under Becket and Sakisako et al., applicant's arguments have been fully considered but they are not persuasive. Applicant's arguments are not commensurate in scope to the claim language. Applicant is advised that during claim examination, the claims must be given their broadest reasonable interpretation consistent with the specification (see MPEP section 2111). The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach (see *In re Cortright*, 165 F.3d 1353, 1359, 49, USPQ2d 1464, 1468 (Fed. Cir. 1999)). Although, the claims are interpreted in light of the specification, limitations from the specification are not read into the claims (see *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993)). Furthermore, apparatus claims must be structurally distinguishable from the prior art in terms of structure, not function (see *In re Danley*, 120 USPQ 528, 531 (CCPA 1959). The claims set the metes and bounds as to what constitutes the applicant's invention. Therefore, although, the definition imparted by the examiner to certain claim limitations, such as for the purge system or the replenisher as taught by the prior art, may not be what the applicant intends, the claim language does not exclude such definitions.

Applicant's arguments with respect to the rejection(s)of claim(s) 68 – 75 under Entwistle (U.S. Pat. No. 4,668,346) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hoogendijk (EPO publication no. 0 517 339 A1).

Applicant's arguments and amendments with respect to the rejections under 35 U.S.C. 102(b) by Gasper et al., Ishikawa and Onofusa et al. have been fully considered and are persuasive. The rejections of the claims in view of these references have been withdrawn.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hoogendijk (EPO publication no. 0 517 339 A1) also teaches a cleaning or purge system associated with the apparatus used in the analytical method (see p. 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (703) 305-0401. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

BJS
July 12, 2003

Jill Warden
Supervisory Patent Examiner
Technology Center 1700